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U.S. SOIL CONSERVATION SERVICE, *Southwest*  
ALBUQUERQUE, NEW MEXICO *Region*

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KEEPING

TRACTORS

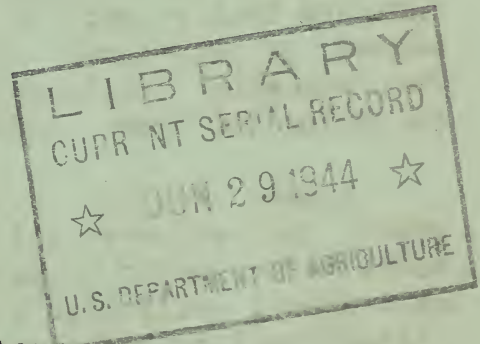
FIT

TO

FIGHT

BY

L. E. LOVE



REGIONAL BULLETIN NO. 92

ENGINEERING SERIES NO. 8

MAY 1944

## KEEPING TRACTORS FIT TO FIGHT

A disabled tank does not win battles, and a tractor laid up for repairs is not helping to produce food for victory. On the battlefield, mechanics work feverishly night and day getting tanks and airplanes back into action. Certainly we on the home front should do our part by using every precaution to keep our equipment in excellent condition.

Although our equipment is old, the Service and the soil conservation districts have spent ample money for maintenance, and the machinery should be in good condition. The fact that a number of units are idle or in poor condition, however, seems to indicate that a part of this equipment has been abused or neglected. It also points to the need for reviewing the basic principles to be observed in caring for heavy machinery.

A new tractor, if properly operated, lubricated, and adjusted will run from 4,000 to 5,000 hours before major repairs are needed, and after an overhaul will give 2,500 to 3,500 hours of efficient service before another major repair is required. The average tractor, properly maintained, should give at least 10,000 hours of service before it is traded or retired from use, and I know of a number of tractors that have operated from 25,000 to 50,000 hours and are still giving efficient and economical service.

If, however, the new tractor is not properly operated, lubricated and adjusted, it will probably need an overhaul after 800 to 1,000 hours,

possibly even sooner. It matters not whether the tractor was put in the repair shop through neglect, ignorance, or willful misuse -- the effect is the same. It is a crippled machine hampering the war effort.

I believe that the Service could get maximum use from its tractors and keep maintenance costs at a minimum by the application of four simple rules:

1. Clean and refill the oil bath air cleaner daily.
2. Keep tracks in proper adjustment - neither too tight nor too loose.
3. Use clean fuel.
4. Keep the machine properly lubricated (including oil changes.)

PRACTICE "PREVENTIVE MAINTENANCE." PREVENT COSTLY REPAIRS AND PROLONGED SHUTDOWNS BY PROPER CARE.

Everyone recognizes the necessity of washing the oil bath cleaner and refilling it to the proper level with oil once each day, but this important operation nevertheless is sometimes neglected.

Tractors usually work in dust, an abrasive that will cause excessive wear in contact with wearing surfaces. In either gas or Diesel engines, air is drawn into the combustion chamber. If this air is not filtered or washed before it gets to the chamber, dust will reach the piston rings, cylinder and piston walls, valves, and valve stems. Naturally, there will be scoring of these parts and very soon compression and explosion will force some of the abrasive past the piston into the lower



chamber, where it will be mixed with the oil. The oil pump forces the oil and the abrasives to every bearing, gear, and moving part of the motor. Before long, a complete overhaul and replacement of parts will be needed.

It takes only a few minutes each day to wash out and refill the air cleaner. If it took 45 minutes, it would still be economy. Taking proper care of the oil filter is just as much a part of the operator's duties as driving the tractor, and he should be removed from the job if he neglects this duty.

Next, let's see how the operator may take proper care of the tractor tracks. Track assemblies on crawler-type tractors take the hardest beating of any part of the machine. They are in dust, dirt, mud, gravel or water all the time. With the exception of sharp sand under water, these physical conditions can be successfully dealt with if we take intelligent care of the track assemblies.

We need to keep two things uppermost in our minds: lubrication and adjustment. Keeping mud and dirt cleaned off the track assembly will pay dividends too, but lubrication and adjustment are more important.

A track is properly adjusted on a 50 to 60 horsepower machine when you can lift the track 2 inches above the track carrier roller. A tighter adjustment causes the track to bind at its 35 pins and bushings. If this tension were maintained, it would wear out the pins and bushings, as well as the front idlers, drive sprockets, and bearings in a comparatively short time.

The more common practice, however, is to run the tracks too loose. A loose track will not stay in alinement. It tends to ride the flanges on the idlers and track rollers, will crawl to the top of the teeth on the drive sprocket, and when traveling at high speeds, will bounce and whip against the track rollers, often breaking roller flanges and track pin bushings. Eventually, the flanges will be in such bad shape that the tracks will run off the idlers when the tractor is making a turn.

Crawler-type tractors should be driven on a road or highway no more than is absolutely necessary, and then only with the tracks properly adjusted. It costs \$352 to buy two new track chains and, in addition, considerable labor is required to change the shoes from the old to the new chains or rails.

Besides keeping the air filter clean and the tracks properly adjusted, the operator should be careful to use clean fuel. Dirty fuel causes fouling, missing, uneven combustion, and loss of power. It will also cause excessive wear of fuel pump parts and plug the spray or injection nozzles.

The commonest cause of dirty fuel is that the barrel in which the fuel is carried may have rust, sediment, scale, water, or other foreign matter in it. When a barrel of fuel is brought to the job in a pickup or truck, the sediment is stirred up and suspended throughout the barrel. For that reason, the truck should be parked for at least 4 hours after reaching the job so that the foreign matter will settle. Then the pump or suction hose should be cleaned of any dust or dirt and inserted in the barrel so that the end is 2 inches from the



bottom of the barrel. In this way, sediment will not be drawn into the tractor tank. All fuel filters, traps, and strainers must be cleaned and serviced regularly.

The easiest, cheapest, and most efficient way to keep tractors in good running order is to practice preventive maintenance. This means that the operator must have the training and willingness to treat machinery with respect.

When the well-trained operator comes to work in the morning, he opens the drain cock under the fuel tank and drains off any sediment, water, or foreign matter that may have settled to the bottom of the tank during the night. Then he checks the radiator and crankcase, to see whether he needs to add water or oil.

If the tractor has a Diesel engine, he starts the small gasoline starting engine and lets it run at normal speed. While this motor is running and warming up the Diesel engine, he takes his volume compressor and grease gun and, starting at the front of the tractor, greases every point on one side of the machine until he gets to the drawbar.

By this time, the Diesel motor should be warm. He throws the starting clutch in and starts the Diesel motor turning over. After it has turned 25 to 50 revolutions, he shifts the injection pump control lever from the "stop" to the "run" position. The Diesel motor should then start, and the operator cuts off the starting engine and lets the Diesel engine idle while he lubricates the other half of his tractor. By the time he has finished, the Diesel engine will be warmed up, the oil circulating, the temperatures equalized in the various



parts of the motor, and his entire machine lubricated for the day's run. He puts his grease guns in a safe place where they will not be damaged or covered with dirt and starts his day's operations.

During the day's work, the operator stops and makes any necessary adjustments, such as the tightening of nuts and bolts. In other words, if he notices something working loose, he makes the adjustment at once. If he should wait until the noon hour or the end of the day, serious damage may be caused and replacement of the part may be necessary. It is a "must" that sufficient tools be with each piece of equipment at all times.

This type of operation is preventive maintenance. It's the old principle of an ounce of prevention being worth a pound of cure. We speak of tractor repairs and shut-downs as equipment problems. Usually, they are human problems. The life of a tractor or of any other piece of heavy equipment depends primarily on the way human beings operate and maintain that equipment.

I repeat that a broken-down tractor is a victory for the Axis. Let's handle our machinery with intelligence and care and thereby hasten the day when peace will come again.

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